

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-12. (Canceled)

13. (Currently Amended) ~~The charge-switch NP probe according to claim 11, wherein said linker carries at least one positive charge.~~

A charge-switch nucleotide phosphate (NP) probe, said NP probe comprising:

an intact NP probe having a terminal phosphate with a fluorophore moiety attached thereto via a linker carrying at least one positive charge, wherein said terminal phosphate is a pyrophosphate with a fluorophore moiety attached thereto, said intact NP probe having a first molecular charge associated therewith, whereupon cleavage of said terminal phosphate as a phosphate fluorophore moiety, said phosphate fluorophore moiety carries a second molecular charge, wherein the difference between said first molecular charge and said second molecular charge is at least 0.5.

14. (Currently Amended) ~~The charge-switch NP probe according to claim 11, wherein said linker carries at least two positive charges.~~

A charge-switch nucleotide phosphate (NP) probe, said NP probe comprising:

an intact NP probe having a terminal phosphate with a fluorophore moiety attached thereto via a linker carrying at least two positive charges, wherein said terminal phosphate is a pyrophosphate with a fluorophore moiety attached thereto, said intact NP probe having a first molecular charge associated therewith, whereupon cleavage of said terminal phosphate as a phosphate fluorophore moiety, said phosphate fluorophore moiety carries a second molecular charge, wherein the difference between said first molecular charge and said second molecular charge is at least 0.5.

15-19. (Canceled)

20. (Canceled)

21. (Currently Amended) ~~The charge-switch NP probe according to claim 1, wherein said charge-switch probe is selected from the group consisting of compound 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 and 60 in Figures 6A-D.~~

A charge-switch nucleotide phosphate (NP) probe, said NP probe comprising:

an intact NP probe having a terminal phosphate with a fluorophore moiety attached thereto, said intact NP probe having a first molecular charge associated therewith, whereupon cleavage of said terminal phosphate as a phosphate fluorophore moiety, said phosphate fluorophore moiety carries a second molecular charge, wherein the difference between said first molecular charge and said second molecular charge is at least 0.5, wherein said charge-switch probe is selected from the group consisting of compound 50, 51, 52, 53, 54, 55, 56, 57, 58, 59 and 60 in Figures 6A-D.

22-48. (Canceled)

49-51. (Canceled)

52. (Currently Amended) ~~The intact charge-switch NP probe according to claim 49, wherein said charge-switch NP probe is a nucleotide triphosphate (NTP); and wherein said phosphate detectable moiety is a pyrophosphate with a fluorophore moiety attached thereto.~~

An intact charge-switch nucleotide phosphate (NP) probe, wherein upon enzymatic cleavage of said intact charge-switch NP probe to produce a phosphate detectable moiety, said phosphate detectable moiety migrates to an electrode, and said intact charge-switch NP probe migrates to the other electrode, wherein said charge-switch NP probe is a nucleotide triphosphate (NTP) and said phosphate detectable moiety is a pyrophosphate with a fluorophore moiety attached thereto.

53. (Canceled)

54. (Previously Presented) The intact charge-switch NP probe according to claim 52, wherein upon cleavage of said phosphate detectable moiety as a pyrophosphate fluorophore moiety, said pyrophosphate fluorophore moiety carries a positive charge relative to said intact NTP probe.

55. (Previously Presented) The intact charge-switch NP probe according to claim 52, wherein upon cleavage of said phosphate detectable moiety as a pyrophosphate fluorophore moiety, said pyrophosphate fluorophore moiety carries a negative charge relative to said intact NTP probe.

56. (Currently Amended) ~~The intact charge-switch NP probe according to claim 49, wherein said charge-switch NP probe is a member selected from the group consisting of a deoxynucleotide triphosphate (dNTP), and a nucleotide triphosphate (NTP).~~

An intact charge-switch nucleotide phosphate (NP) probe, wherein upon enzymatic cleavage of said intact charge-switch NP probe to produce a phosphate detectable moiety, said phosphate detectable moiety migrates to an electrode, and said intact charge-switch NP probe migrates to the other electrode, and wherein said charge-switch NP probe is a member selected from the group consisting of a deoxynucleotide triphosphate (dNTP), and a nucleotide triphosphate (NTP).

57. (Previously Presented) The intact charge-switch NP probe according to claim 56, wherein said charge-switch NP probe is a deoxynucleotide triphosphate (dNTP).

58. (Previously Presented) The intact charge-switch NP probe according to claim 57, wherein said deoxynucleotide triphosphate (dNTP) is a member selected from the group consisting of deoxyadenosine triphosphate, deoxycytosine triphosphate, deoxyguanosine triphosphate, deoxythymidine triphosphate and deoxyuridine triphosphate.

59. (Previously Presented) The intact charge-switch NP probe according to claim 56, wherein said nucleotide triphosphate (NTP) is a member selected from the group

consisting of adenosine triphosphate, cytosine triphosphate, guanosine triphosphate and uridine triphosphate.

60. (Previously Presented) The intact charge-switch NP probe according to claim 52, wherein said fluorophore moiety is attached to said terminal phosphate via a linker.

61. (Previously Presented) The intact charge-switch NP probe according to claim 60, wherein said fluorophore linker is an alkylene group having between about 5 to about 12 carbons.

62. (Previously Presented) The intact charge-switch NP probe according to claim 60, wherein said linker carries at least one positive charge.

63. (Previously Presented) The intact charge-switch NP probe according to claim 60 wherein said linker carries at least two positive charges.

64. (Currently Amended) ~~The intact charge-switch NP probe according to claim 49, wherein at least one of the phosphate moieties of said nucleotide phosphate probe has an ionized oxygen atom with a counter-cation associated therewith.~~

An intact charge-switch nucleotide phosphate (NP) probe, wherein upon enzymatic cleavage of said intact charge-switch NP probe to produce a phosphate detectable moiety, said phosphate detectable moiety migrates to an electrode, and said intact charge-switch NP probe migrates to the other electrode, wherein at least one of the phosphate moieties of said nucleotide phosphate probe has an ionized oxygen atom with a counter-cation associated therewith.

65. (Currently Amended) The intact charge-switch NP probe according to claim 49 64, wherein said counter-cation is a metal ion.

66. (Previously Presented) The intact charge-switch NP probe according to claim 65, wherein said metal ion is selected from the group consisting of  $Mg^{++}$ ,  $Mn^{++}$ ,  $K^{+}$  and  $Na^{+}$ .